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United States Patent [19]

Roh et al.

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[54] **HOT ELECTRON DEVICE AND A
RESONANT TUNNELING HOT ELECTRON
DEVICE**

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neling Hot Electron Transistors Grown by Chemical Beam
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[57] **ABSTRACT**

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[30] **Foreign Application Priority Data**

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[51] **Int. Cl.⁶** **H01L 29/06; H01L 29/76**

[52] **U.S. Cl.** **257/26; 257/29; 257/25;**
257/191

[58] **Field of Search** 257/26, 25, 29,
257/191, 197

The present invention is to solve the problems caused in various methods used to improve the performance of the device by improvement of conventional base layer. The present invention discloses a hot electron device which can improve the performance of the device such as the improvement in the current density and decrease in transition time by reducing the dispersion phenomenon by introducing indium arsenide layer having v-shape conduction band due to the graded composition as the base layer of hetero structure hot electron device (HET).

[56] **References Cited****U.S. PATENT DOCUMENTS**

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In addition, the present invention discloses a resonant tunneling hot electron device which is constructed by adding an emitter electron projection layer to the hot electron device of the present invention so that the Fermi energy and alignment can occur due to the stark shift and the projection of hot electron to the base region can occur through the Fermi energy and alignment.

2 Claims, 3 Drawing Sheets